No. 626,227. Patented June 6, 1899.

L. B. GAYLOR.

CRANK ATTACHMENT FOR BICYCLES.

(Application filed Aug. 1, 1898.)

(No Model.)

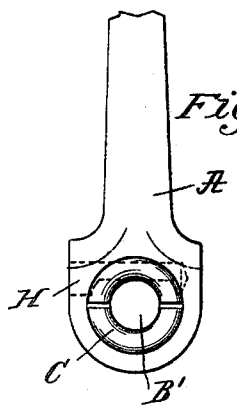


Fig. 1.

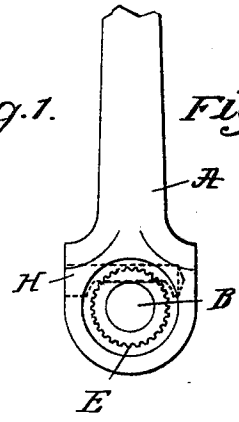


Fig. 2.

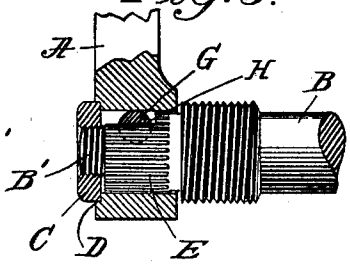


Fig. 3.

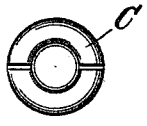


Fig. 4.

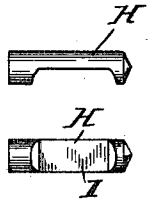


Fig. 5.

Fig. 6.

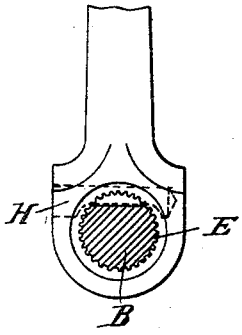


Fig. 7.

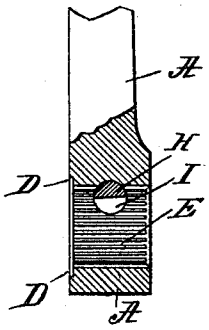


Fig. 8.

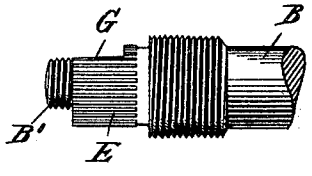


Fig. 9.

Witnesses
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THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

LEONARD B. GAYLOR, OF ERIE, PENNSYLVANIA.

CRANK ATTACHMENT FOR BICYCLES.

SPECIFICATION forming part of Letters Patent No. 626,227, dated June 6, 1899.

Application filed August 1, 1898. Serial No. 687,436. (No model.)

To all whom it may concern:

Be it known that I, LEONARD B. GAYLOR, a citizen of the United States, and a resident of Erie, in the county of Erie and State of Pennsylvania, have invented a certain new and useful Improvement in Crank Attachments for Bicycles, of which the following is a specification.

My invention relates to an improvement in crank attachments for bicycles, the object of which is to do away with the usual cotter-pin, which is an objectionable feature in bicycles for a number of reasons, among them the annoyance occasioned by the catching of the rider's trousers or dress upon their projecting ends, thus winding them up, which usually causes damage to the garment and has been known to occasion serious accident.

I show my invention in conjunction with an invention previously made by me—that is to say, the end of the shaft is cylindrical and is longitudinally grooved or serrated with a succession of relatively fine parallel ribs, and the eye of the crank is likewise grooved with an equal number of corresponding ribs.

Referring to the drawings thereof, Figure 1 illustrates an endwise elevation of the invention in its completed condition. Fig. 2 illustrates a sidewise elevation of the invention, in which the end of the shaft and of the nut and the side of the crank are shown, the pin being seen in dotted lines. Fig. 3 illustrates a partially-sectional view of the eye of the crank, taken transversely thereof, the pin being shown in section. Fig. 4 illustrates an elevation of the clamping-nut. Fig. 5 illustrates a sidewise view of the clamping-pin. Fig. 6 illustrates a face view of the clamping-pin. Fig. 7 illustrates a view in which the crank is in elevation and the shaft in section, showing the relation of the pin to the end of the shaft. Fig. 8 illustrates a vertical sectional view of the eye of the crank, taken on about the medial line of the crank and showing the pin in position. Fig. 9 is an elevation of the end of the shaft, all other parts being removed.

In bicycle crank mechanism of the class stated the interlocking parallel ribs upon the shaft and the crank have been found the most efficient means for rigidly and permanently locking the parts together; but in the actual manufacture of the parts it has been found difficult, owing to the inevitable wear of the tools, to turn out the parts so accurately made as to secure exact registration between the grooves of the shaft and those of the crank-eye. The purpose of my invention is therefore to provide means whereby this lack of exactness may be compensated for and a rigid and permanent joint secured.

A is the crank; B, the shaft.

B′ is a projection from the end of the shaft, which is screw-threaded and with which the clamping-nut C engages. The crank is recessed or shouldered, as at D, to receive the inner edge of the clamping-nut C.

E are the parallel grooves on the cylindrical end of the shaft. F (see Fig. 8) are the correspondingly-parallel grooves in the solid eye of the crank.

G (see Figs. 3 and 9) is a tapered surface, produced in any suitable manner upon one side of the end of the shaft, whereby some of the longitudinal ribs are cut away and the inclination extends from the end of the shaft inwardly, gradually rising.

H is a pin, the shape of which is shown in Figs. 5 and 6, the ends of which are full; but the central portions are cut away, as shown. The crank is bored transversely, as at I, (see Fig. 8,) to receive the pin H, so that the pin H lies transversely or crosswise of the axial line of the hole through the eye of the crank and also crosswise of the inclined surface of the shaft.

The operation of the invention is as follows: The parts being made as shown, the pin H is placed within the hole I made for it in the crank and is shoved entirely in until its outer end is preferably flush with the surface of the edge of the crank. The crank, with the pin in position, is then forced upon the end of the shaft, the longitudinal grooves in the two parts, respectively, being caused to properly interlock, and it will be observed that as the crank passes onto the end of the shaft and has nearly reached the limit of its movement the flattened or cut-away portion of the pin (see Figs. 8 and 9) engages with the inclined flat surface G on the end of the shaft in such manner that a crowding action is exerted upon the two parts, and as the pressure which forces the crank onto the end of the shaft is con-

tinued this crowding action referred to will cause the parallel ribs on the two parts to be drawn snugly together and into rigid contact, and the full size of the inner end of the pin will engage with the side of the end of the shaft adjacent to the inclined or beveled surface E, thus preventing the pin from endwise movement should it at any time become loose. The means employed for forcing the crank upon the end of the shaft may be any suitable means, but the lock-nut C will ordinarily serve this purpose, there being of course suitable implements provided for turning it against considerable resistance. The lock-nut when in position is partially received within the recess or seat made for it in the side of the crank, thus strengthening the structure and giving a finished appearance. The threads on the end of the shaft and in the nut, respectively, should be right and left, depending upon which side of the machine they are on, as is well understood.

I have found after experimenting with a large number of different forms of crank-attaching devices that this form is the best and cheapest, and a special feature of the invention is its practical value from a manufacturer's standpoint, because all the parts may be made or formed by the employment of machine-tools, no hand-work being required, whereby speed in manufacture, accuracy of form, and low cost are secured.

I claim—

The combination, in a bicycle, of a shaft the end of which is substantially cylindrical and provided with a series of fine longitudinally-running parallel ribs, a crank the eye of which is provided with ribs corresponding to those on the shaft, an inclined surface on the shaft which gradually rises from its end inwardly, a pin in the crank adjacent to the eye thereof and adapted to engage crosswise with the inclined surface on the shaft, the inner end of the pin being larger than that part of it which engages with the shaft, and a nut threaded to the shaft at its outer end whereby the crank will be held to the shaft, for the purposes set forth.

Signed at New York, in the county of New York and State of New York, this 29th day of July, A. D. 1898.

LEONARD B. GAYLOR.

Witnesses:
PHILLIPS ABBOTT,
EDGAR R. MEAD.